

REMARKS

Claims 13-19 and 26-58 are pending. Claims 13 and 37 are in independent form.

CLAIMS 13 AND 37

In the action mailed March 6, 2007, claims 13 and 37 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 5,524,631 to Zahorian et al. (hereinafter “Zahorian”).

As amended, claim 13 relates to a method that includes receiving a cardiac biological signal that includes information describing events, determining a merit of the information in the cardiac biological signal describing each event based on one or more of a severity of a cardiac condition associated with the event and a quality of the information describing the event, handling, for medical purposes, information describing a first subset of the events that have merits meeting a merit criterion, and discarding information describing a second subset of the events that have merits that fail to meet the merit criterion. Events comprise periods in time when an information content of the cardiac biological signal is of increased relevance to a particular purpose.

Claim 37 relates to an article that includes one or more machine-readable media storing instructions operable to cause one or more machines to perform operations. The operations are comparable to the activities recited in claim 13.

As best understood, the rejections of claims 13 and 37 are based on the contention that Zahorian's different estimates of the heart rate of a fetus constitute information describing events. *See, e.g., Office action mailed March 6, 2007*, para. 4 (contending that Zahorian's handling of one heart rate estimate constitutes the handling of information describing a first subset of events and Zahorian's failure to handle other heart rate estimates constitutes the discarding of information describing a second subset of events).

Applicant respectfully disagrees. As discussed at page 5, line 9-12 of the specification, events are periods in time when the information content of a biological signal is deemed to be of increased relevance to a particular purpose for which the biological signal is monitored. Zahorian's estimates of the heart rate of a fetus do not describe periods in time when the information content of a biological signal is deemed to be of increased relevance to a particular purpose. Instead, Zahorian's estimates of the heart rate appear to be made and displayed continuously, without regard of the relevance of the underlying cardiac behavior to a particular purpose.

In this regard, Zahorian describes an acoustic fetal heart rate monitor. *See, e.g., Zahorian*, col. 3, line 64-66. Zahorian's monitor includes a preprocessing unit 3 and a signal processing system 4. *Id.*, FIG. 1. Preprocessing unit 3 includes amplifiers and filters to amplify and filter the signals output by different acoustic sensors. *Id.*, FIG. 1; col. 4, line 51-62. The signals output by preprocessing unit 3 are received by signal processing system 4. *Id.*, col. 5, line 5-7.

Zahorian's FIG. 3 illustrates the processing of these signals by signal processing system 4. *Id.*, col. 5, line 31-32. After filtering, "multiple parallel non-linear filters" can be used to identify fetal heart beats from the acoustic sensor data. *Id.*, col. 5, line 49-51. In particular, the same signals are provided to the two different filters, which "operate in parallel and provide redundant identification of fetal heart beats." *Id.*, col. 5, line 53-55. This parallel redundant processing improves the accuracy of the identification of fetal heart beats. *Id.*, col. 5, line 55-57.

The resulting signals from the multiple parallel nonlinear filters are then autocorrelated, peaks in the autocorrelation are identified, and fetal heart rate estimated based on the identified peaks. *Id.*, col. 8, line 25-27. Heart rate estimates are determined for each of the multiple channel sensors, for both nonlinear filters. *Id.*, col. 8, line 35-36. These estimates are ranked using figures of merit that are derived from continuity constraints and a measure of periodicity in the waveform. *Id.*, col. 8, line 36-40. Zahorian's approach for determining the figures of merit is described at col. 8, line 50 – col. 9, line 26. The heart rate estimate with the highest figure of merit can be selected as the current and most accurate fetal heart rate and displayed. *Id.*, col. 9, line 27-29. When the highest figure of merit fails to meet an empirical threshold value, the rate is still displayed—albeit with a color coding indicating a possible error. *Id.*, col. 9, line 34-37.

Since heart rates are estimated and displayed continuously in Zahorian, even when the figure of merit of a heart rate estimate fails to meet an empirical threshold value, Zahorian's estimates of heart rate of a fetus do not describe periods in time when the information content of a biological signal is deemed to be of increased relevance to a particular purpose, and hence do not describe events. Instead, Zahorian's estimates of the heart rate of a fetus are made continuously, without regard to relevance to a particular purpose.

Moreover, even if Zahorian's estimates of the heart rate were considered to be information describing events, claims 13 and 37 would not be anticipated by Zahorian. In this regard, claims 13 and 37 recite that a cardiac biological signal that includes information describing events is received. There is no cardiac biological signal in Zahorian that includes information describing Zahorian's estimates of the heart rate. Instead, Zahorian's heart rate estimates are derived from the signals provided to the Zahorian's parallel non-linear filters.

Accordingly, Zahorian fails to describe or suggest the subject matter recited in claims 13 and 37 in as complete detail as contained in these claims. Applicant respectfully requests that the rejections of claims 13, 37, and the claims dependent therefrom, be withdrawn.

Claims 13 and 37 were also rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent Publication No. 2002/0137994 to Baker, Jr. et al. (hereinafter "Baker").

The rejection of claims 13 and 37 are based on the contention that various saturations and heart rates calculated by Baker constitute information describing events. See, e.g., *Office action mailed March 6, 2007*, para. 10 (contending that Baker's confidence predictions for saturations and heart rates constitutes merit determinations, and the rejection of certain saturations and heart rates constitutes the discarding of information describing a subset of events).

Applicant respectfully disagrees. In this regard, Baker describes that pulse oximetry data can be used to calculate various parameters. For example, an adaptive comb filter can be used to track slowly varying heart rates. See, e.g., *Baker*, para. [0036]. As another example, pattern matching techniques can be used to calculate heart rates in cases of arrhythmia or suddenly changing heart rates. *Id.*

The rejection contends that these calculated parameters (e.g., Baker's estimates of heart rate and saturation) constitute information describing events. Applicant respectfully submits that this contention is fundamentally inconsistent with the subject matter recited in claims 13 and 37. For example, there is no biological signal in Baker that includes estimates of heart rate or saturations. Instead, Baker's heart rate estimates are derived from biological signals.

Accordingly, Baker fails to describe or suggest the subject matter recited in claims 13 and 37 in as complete detail as contained in these claims. Applicant respectfully requests that the rejections of claims 13, 37, and the claims dependent therefrom, be withdrawn.

CLAIM 36

Claim 36 was rejected under 35 U.S.C. § 102(b) as anticipated by Zahorian.

Claim 36 recites the subject matter of claim 13, but also includes comparing a first merit of information describing a first event with a second merit of information describing a second event to identify a more meritorious event and creating an episode describing the more meritorious event. Creating the episode includes redacting information describing the more meritorious event.

As a threshold matter, the rejection of claim 36 fails to address the recited subject matter of redacting information describing the more meritorious event. Since 35 U.S.C. § 132 and 37 C.F.R. § 1.104(2) both require that the reasons for any adverse action be stated in an Office action, the rejection is facially deficient and should be withdrawn. Further, Applicant requests that the bases for the rejection of any claim, including claim 27, be set forth so that Applicant may judge the propriety of continuing prosecution.

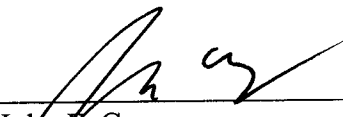
Moreover, as discussed above, the rejection of claim 13 is based on the contention that Zahorian's different estimates of the heart rate of a fetus constitute information describing events. Zahorian does not describe or suggest that such heart rate estimates can be redacted. Indeed, given that these heart rate estimates are likely to be numeric (e.g., 80-200 beats per minute), it would appear that redaction would be inapplicable or at least inappropriate.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Please charge the excess claims fees and any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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John F. Conroy
Reg. No. 45,485

Fish & Richardson P.C.
12390 El Camino Real
San Diego, California 92130
Telephone: (858) 678-5070
Facsimile: (858) 678-5099

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